



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Timothy P. BEATON, et al.

Art Unit : 3672

Serial No.: 09/888,328

Examiner : Frank Tsay

Filed : June 22, 2001

Title : METHOD FOR DRILLING A WELLBORE USING A BI-CENTER DRILL BIT

Assistant Commissioner for Patents  
Washington, DC 20231

*H. J. Kasper*  
*E. Tsay*  
*1/30/03*  
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JAN 22 2003

**REPLY UNDER 37 CFR § 1.111**

**GROUP 3600**

Dear Sir:

In response to the Office Action dated September 17, 2002, please consider the following remarks. Applicants wish to thank the Examiner for his thorough review of the application.

**Objection to the Drawing**

The drawing was objected to as informal per the Examiner Interview of January 7, 2003. A formal drawing sheet is included with this response, along with a separate letter to the official draftsperson. No new matter has been added in the amended Fig. 1.

**Rejections under 35 U.S.C. § 102**

Claims 1-3 were rejected as anticipated by U.S. Patent No. 5,957,225, issued to Sinor. This rejection is respectfully traversed.

Claim 1 recites a method for drilling a wellbore comprising operating a turbine-type mud motor coupled to a bi-center drill bit, and applying a selected axial force to the bit so that it drills in a directionally stable manner. This method advantageously provides the ability to maintain a desired rate of penetration (ROP) while lessening the required weight on bit (WOB), thereby permitting the use of bi-center bits in applications for which they were previously unsuited due to their tendency to deviate from a desired trajectory with higher WOB.

Bi-center bits are known in the art to drill a wellbore having a pass-through diameter that is greater than a diameter of the bit. Such bits are used to advantageously provide a wider borehole, particularly in formations that are prone to expansion, so that the formation

surrounding the wellbore will not interfere with rotation of the drill string or extraction of the drill bit from the wellbore. Unfortunately, bi-center bits will typically exhibit a degree of directional instability. This instability is traditionally tolerated to some degree in normal drilling because of the advantages of having a wider borehole. However, in directional drilling, where maintaining a desired trajectory is critical, bi-center bits have been disfavored because of this directional instability. Embodiments of the present invention advantageously address this inherent directional instability of bi-center bits by providing an increased RPM to the bit while lowering the WOB so that directional stability is increased, particularly in directional drilling applications.

In contrast, Sinor discloses an apparatus and method for using a liner equipped with a rock cutting device to drill a segment of wellbore, thereby obviating the need for a drill pipe (Col. 11, lines 37-40). In order to drill beyond the liner or casing according to Sinor, a drill bit is run down through the liner and drills out a drillable portion that is adapted to cause minimal damage to the penetrating drill bit (Col. 11, lines 45-55).

Sinor neither discloses nor suggests the use of a bi-center drill bit. Although embodiments of a drill shoe according to Sinor may have bi-center and anti-whirl characteristics, these drill shoes are not bits and differ significantly therefrom. Such shoes are typically attached to the end of a liner or casing string to help guide or orient the liner or casing and to prevent flow of wellbore fluids into the casing string while it is run. The drill shoe according to Sinor is of a drillable variety that will typically have at least a portion that comprises a soft alloy or other easily drillable material so that a drill bit of a drill string is able to penetrate the shoe for drilling beyond the liner or casing. Sinor also states that bi-center bits are not fixed on casings because fixed bits cannot be pulled back through the casing once drilling is completed (Col. 4, lines 55-58). Therefore, the drill shoe of Sinor cannot disclose nor suggest the bi-center bit of claim 1.

Furthermore, Sinor neither discloses nor suggests the application of a selected axial force on a bit so that it will drill in a directionally stable manner. As previously discussed, Sinor neither discloses nor suggest a bit as recited in claim 1. Furthermore, Sinor's only discussion of drilling stability is with respect to an anti-whirl design for minimizing vibration. However, Sinor fails to disclose or suggest that an axial force on the bit should be selected so that the bit drills in

a directionally stable manner. Therefore, Sinor cannot disclose nor suggest the application of a selected axial force as recited in claim 1.

With regard to the steerable motor of claim 2, Sinor fails to disclose the use of such a motor with a bi-center bit. As previously discussed, Sinor neither suggests nor discloses a bi-center drill bit, teaching instead a shoe bit having bi-center features. Furthermore, Sinor neither discloses nor suggests the application of a selected axial force to a bit. With regard to the steerable motor, the only use of a steerable motor disclosed by Sinor is the use of a steerable assembly with a drill pipe and non-shoe bit in order to sidetrack from the inside of an existing casing. Once the steerable assembly and bit kick out of the Sinor casing, they are removed and a liner assembly is run to the bottom to continue drilling (Col. 18, lines 29-40). A bi-center bit would not be used within a casing and particularly would not be used to drill through a casing according to Sinor, where the casing or liner will have a drillable window through which the bit must be directed. Furthermore, the steerable motor disclosed by Sinor does not maintain a selected trajectory, as recited in claim 2. Instead, the steerable motor is used to direct a bit into the drillable portion of the Sinor casing. Therefore, Sinor fails to disclose or suggest the steerable motor and bi-center bit as used in claim 2, and also fails to disclose the maintenance of a selected trajectory.

With regard to the steerable or bent housing motor of claim 3, the same differences discussed for claim 2 will apply with the exception of the maintenance of a selected trajectory. Claim 3 recites instead that the wellbore trajectory is adjusted in a desired direction. Sinor neither discloses nor suggests that the trajectory of a wellbore is adjusted in a desired direction. The steerable motor disclosed by Sinor is used only to direct a bit through a drillable portion of casing. Adjustment of trajectory is not disclosed by Sinor and Figures 3, 4, and 5 disclose no more than the drilling of a slant-well, and do not disclose or suggest any alteration or adjustment of trajectory. In summary, Sinor fails to disclose or suggest the steerable/bent housing motor and bi-center bit as used in the method of claim 3, and also fails to suggest or disclose the adjustment of a trajectory, as recited in this claim.

For at least the reasons discussed above, claims 1-3 are patentable over Sinor. Accordingly, withdrawal of this rejection is respectfully requested.

## Conclusion

Claims 1-3 have been shown to be allowable over the prior art. Applicants believe that this paper is responsive to each and every ground of rejection cited by the Examiner in the Action dated September 17, 2002, and respectfully request favorable action in the form of a Notice of Allowance. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 05516.079002).

Respectfully submitted,

Date: 1/17/03

  
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## AMENDMENT TRANSMITTAL LETTER (Large Entity)

Applicant(s): Timothy P. BEATON, et al.

Docket No.

05516/079002

Serial No.  
09/888,328Filing Date  
06/22/2001Examiner  
F. TsayGroup Art Unit  
3672

Invention: METHOD FOR DRILLING A WELLBORE USING A BI-CENTER DRILL BIT

TO THE ASSISTANT COMMISSIONER FOR PATENTS:

Transmitted herewith is an amendment in the above-identified application.

The fee has been calculated and is transmitted as shown below.



## CLAIMS AS AMENDED

	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST # PREV. PAID FOR	NUMBER EXTRA CLAIMS PRESENT	RATE	ADDITIONAL FEE
TOTAL CLAIMS	3 -	20 =	0	x \$18.00	\$0.00
INDEP. CLAIMS	1 -	3 =	0	x \$84.00	\$0.00
Multiple Dependent Claims (check if applicable) <input type="checkbox"/>					\$0.00
TOTAL ADDITIONAL FEE FOR THIS AMENDMENT					\$0.00

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Any additional filing fees required under 37 C.F.R. 1.16.

Any patent application processing fees under 37 CFR 1.17.

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Dated: 01/17/2003

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Applicant(s): Timothy P. BEATON, et al.

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05516.079002

Serial No.  
09/888,328Filing Date  
06/22/2001Examiner  
F. TsayGroup Art Unit  
3672Invention: **METHOD FOR DRILLING A WELLBORE USING A BI-CENTERED DRILL BIT**

I hereby certify that the following correspondence:

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